

REALIGNMENT OF THE SPECIES PLACED IN *EXOgonium* (CONVOLVULACEAE)¹

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Exogonium has never been widely accepted as a genus although there have been proponents of this rank since Choisy (1834, 1838, 1845) first described the taxon. House (1908), Matuda (1963) and Standley & Williams (1970) have been among the recent authors keeping the species as a separate genus. Others have suggested that the species could better be ranked at some infrageneric level. Grisebach (1864) reduced it to a section of *Ipomoea*, while Meisner (1869) considered the plants a subgenus.

Since the origin of the name *Exogonium* by Choisy (1834) 31 species have been placed in the taxon, many authors varying the definition of the group slightly. Although usually unstated, the major criteria for inclusion in the taxon were red flowers, salverform corollas, and exerted stamens and stigmas. Floral morphology suggests that the species included in *Exogonium* are mostly adapted for bird pollination; the species exhibit the characters classically associated with this syndrome (van der Pijl, 1960, 1961; Meeuse, 1961; Percival, 1965; Faegri & van der Pijl, 1971). However, a polyphyletic taxon has been created because species from several lines have been lumped solely on the basis of a common pollination system.

The following treatment is a revision of the binomials placed in *Exogonium*. Several other related species are also included. Some of the nomenclatural and biological problems within *Ipomoea* have been discussed elsewhere (Verdcourt, 1957, 1963; Austin, 1975a, 1975b).

Consideration of all morphological criteria indicates that the species proposed for inclusion in *Exogonium* should be placed in the following taxonomic groups.

Group 1. *Exogonium velutifolium* House [Bull. Torrey Bot. Club 35: 100. 1908. TYPE: Mexico, Oaxaca, *Nelson 1877* (GH, holotype; US, isotype)] is not a member of the Convolvulaceae but the Acanthaceae. The correct name is *Ruellia velutifolia* (House) Wasshausen & Austin (Phytologia 25: 433–437. 1973).

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Specimens in the herbaria at A, FAU, F, G, GH, IJ, K, L, LE, M, MEXU, MO, NY, US, and W were examined during visits and on loan. Except where types are cited from other herbaria, material from these institutions formed the basis of the study. My thanks are extended to curators and staff of the institutions cited. K. R. Robertson (Arnold Arboretum) has revised the genus *Jacquemontia* and provided especially useful comments. W. G. D'Arcy (Missouri Botanical Garden) criticized the original manuscript.

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Group 2. *Exogonium filiforme* (Desr.) Choisy is the only member of the genus *Jacquemontia* with bird-pollinated flowers. The small seeds and capsule which breaks into several sections at dehiscence, among other characteristics, support the conclusion that this is a *Jacquemontia* (see Robertson, 1971).

Jacquemontia solanifolia (L.) Hall. f., Bot. Jahrb. Syst. 16: 542. 1893.

Basionym: *Ipomoea solanifolia* L., Sp. Pl. 161. 1753. LECTOTYPE: *Ipomoea foliis cordatis* Plumier, Cat. Pl. Amer., p. 3 in Nova Pl. Amer. Gen. Tab. XCIV. fig. 1.

Synonyms: *Quamoclit solanifolia* (L.) Choisy in DC., Prodr. 9: 335. 1845. *Exogonium solanifolium* (L.) Britton, Mem. Brooklyn Bot. Gard. 1: 82. 1918.

Ipomoea filiformis Jacq., Enum. Pl. Carib. 13. 1760; Sel. Stirp. Amer. 27, pl. 19. 1763. LECTOTYPE: illustration by Jacquin, pl. 19. 1763. *Convolvulus filiformis* (Jacq.) Desr. in Lam., Encycl. Méth. Bot. 3: 555. 1789. *Exogonium filiforme* (Jacq.) Choisy, Mem. Soc. Phys. Genève 8: 129. 1838.

Distribution: Puerto Rico, Guadalupe, Antigua, St. Barthelemy, St. Croix, St. Thomas, Martinique, Tortola.

Group 3. House included *Exogonium racemosum*, *E. wrightii* and *E. rudolphii* in his concept of the genus. These three names have been reduced to two species and placed in *Turbina* by O'Donnell (1960) and Liogier (1968). The accrescent sepals indicate that this is the proper disposition. A new combination does need to be made.

1. *Turbina racemosa* (Poir.) D. Austin, comb. nov.

Basionym: *Ipomoea racemosa* Poir. in Lam., Encycl. Méth. Bot. Suppl. 4: 633. 1816, non Roth, 1821, nec Griseb., 1866. TYPE: St. Domingo. Possibly in LAM-P, not in the microfiche. Interpretation based on the protologue.

Synonyms: *Convolvulus racemosus* (Poir.) Sprengel, Syst. Veg. 1: 600. 1825. *Exogonium racemosum* (Poir.) Choisy, Mem. Soc. Phys. Genève 8: 128. 1838.

Calystegia berterii Sprengel ex Hall. f., Bot. Jahrb. Syst. 16: 558. 1893, nom. nud., pro syn.

Ipomoea bracteata Rudol. ex Ledeb. in Schrad., Neues J. Bot. 2: 292. 1807, non Cav., 1799. TYPE: St. Domingo, *Rudolphi* (not at LE). *Ipomoea rudolphii* Roem. & Schult., Syst. Veg. 4: 222. 1819. *Pharbitis bracteata* (Rudol. ex Ledeb.) Choisy in DC., Prodr. 9: 344. 1845. *Rivea bracteata* (Rudol. ex Ledeb.) Hall. f., Bot. Jahrb. Syst. 18: 158. 1894. *Turbina rudolphii* (Roem. & Schult.) O'Donnell, Lilloa 30: 64. 1960.

Convolvulus altissimus Sprengel, Syst. Veg. 1: 613. 1825. TYPE: Hispaniola, *Bertero* (MO, isotype). *Ipomoea altissima* (Sprengel) Bert. ex G. Don, Gen. Syst. 4: 273. 1838.

Distribution: Cuba, Haiti, Dominican Republic.

2. *Turbina wrightii* (House) Alain, Brittonia 20: 152. 1968.

Basionym: *Exogonium wrightii* House, Bull. Torrey Bot. Club 35: 99. 1908. TYPE: Cuba, *Wright 1650* (GH, holotype; MO, isotype).

Synonyms: *Ipomoea wrightii* (House) Alain, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 22: 123. 1955.

Ipomoea racemosa sensu Griseb., Cat. Pl. Cub. 205. 1866, non Poir., 1816.

Distribution: Endemic to Cuba.

Group 4. Three binomials illustrated by Sessé & Moçño have been placed in *Ipomoea* sect. *Quamoclit* by Choisy (1845) and O'Donell (1959). Their caudate sepals clearly indicate affinity with that species group.

1. *Ipomoea hastigera* H.B.K., Nov. Gen. Sp. Pl. 3: 87. 1819; O'Donell, Lilloa 29: 42. 1959.

Exogonium curviflorum Sessé & Moçño ex Choisy in DC., Prodr. 9: 336. 1845, nom. pro syn.

2. *Ipomoea neei* (Sprengel) O'Donell, Lilloa 29: 69. 1959.

Exogonium umbellatum Moçño & Sessé ex Choisy in DC., Prodr. 9: 336. 1845, nom. pro syn.

3. *Ipomoea neei* (Sprengel) O'Donell, Lilloa 29: 69. 1959.

Exogonium corimbosum Sessé & Moçño ex O'Donell, Lilloa 29: 71. 1959, nom. pro syn.

A fourth species was not included in O'Donell's discussion of the *Quamoclit* group. The species is an *Ipomoea*; the flowers appear to be bird pollinated; and the morphology indicates affinity with the *Quamoclit* group.

4. *Ipomoea uhdeana* (Fenzl. ex Hall. f.) D. Austin, comb. nov.

Basionym: *Exogonium uhdeanum* Fenzl. ex Hall. f., Bot. Jahrb. Syst. 16: 559. 1893. A new name for *Quamoclit tubulosa* Mart. & Gal.

Synonyms: *Quamoclit tubulosa* Mart. & Gal., Bull. Acad. Roy. Sci. Bruxelles 12: 270. 1845. TYPE: *Galeotti 1393* (W, isotype). *Ipomoea tubulosa* (Mart. & Gal.) Hemsl., Biol. Centr. Amer., Bot. 2: 395. 1882, non Roem. & Schult., 1819.

Group 5. *Ipomoea bracteata*, the type species of *Exogonium*, shares many characteristics with *I. purga* and its allies. Only three of the nine species in the alliance have been placed in *Exogonium*.

Ipomoea: *Exogonium* alliance.

Exogonium Choisy, Mem. Soc. Phys. Genève 6: 443. 1834.

Ipomoea subgen. *Exogonium* (Choisy) Meisn. in Mart., Fl. Bras. 7: 221. 1869.

Ipomoea sect. *Batatas* subsect. *Emeticae* House, Ann. New York Acad. Sci. 18: 239. 1908.

1. *Ipomoea bracteata* Cav., Icon. Descr. Pl. 5: 51, pl. 477. 1799. TYPE: Cited as *Ipomoea ?bracteata* by Cav.; based on two collections: Mexico, "Mazatlan duabus leucis" Sessé & Moçño and "quattuo a Chipalcingo" Sessé & Moçño (probably MA, not seen). Interpretation based on plate 477 by Cavanilles.

Synonyms: *Ipomoea cincta* Roem. & Schult., Syst. Veg. 4: 254. 1819, nom. illeg. *Exogonium bracteatum* (Cav.) Choisy, Mem. Soc. Phys. Genève 6: 443. 1834.

Ipomoea spicata H.B.K., Nov. Gen. Sp. Pl. 3: 112. 1819. TYPE: Mexico, *Humboldt & Bonpland* (P, not seen, microfiche seen). *Exogonium spicatum* (H.B.K.) Choisy, Mem. Soc. Phys. Genève 8: 128. 1838, nom. illeg.

Exogonium olivae Bárcena, Viaje Cav. Cacahuam. 29. 1874. TYPE: Mexico, Cuernavaca, *Bárcena* (presumably MEXU, not found). Interpretation based on the Bárcena plate.

Convolvulus bractiflorus Sessé & Moçño, Pl. Nov. Hisp. 38. 1887; Pl. Nov. Hisp. 22. 1893. TYPE: Mexico, Sessé & Moçño (probably MA). Their Icones 207 is cited in the 1893 publication, but I have not been able to obtain a copy of this. The interpretation used here is based on the protologue.

Ipomoea bracteata var. *pubescens* Robinson & Greenman, Amer. J. Sci. 50: 160. 1895. TYPE: Mexico, Jalisco, Pringle 4734 (MO, holotype). *Exogonium bracteatum* var. *pubescens* (Robinson & Greenman) House, Bull. Torrey Bot. Club 35: 101. 1908.

Distribution: Baja California, Jalisco, Sinaloa, Oaxaca, Tepic, Morelos, Sonora, Chihuahua, Michoacán, and Guerrero (Mexico).

2. *Ipomoea dumosa* (Benth.) L. O. Williams, Fieldiana, Bot. 32: 190. 1970. Basionym: *Exogonium dumosum* Benth., Pl. Hartw. 46. 1840. TYPE: Hartweg s.n. (K, holotype, not seen; F, photo).

Distribution: Mexico.

This species is very close to *I. purga* and has been considered synonymous with that population by some.

3. *Ipomoea elongata* Choisy in DC., Prodr. 9: 355. 1845. TYPE: Mexico, Oaxaca, Andrieux 212 (G-DC, holotype; US, photo).

Distribution: Mexico. See Matuda, Anales Inst. Biol. Univ. Nac. México 35: 75. 1964.

4. *Ipomoea emetica* Choisy in DC., Prodr. 9: 376. 1845. TYPE: Mexico. Based on an unpublished plate by Sessé & Moçino (not found).

Synonyms: *Ipomoea sagittata* Sessé & Moçino ex Choisy in DC., Prodr. 9: 376. 1845, nom. pro syn., non Poir., 1791.

Ipomoea caudata Fernald, Proc. Amer. Acad. Arts 36: 498. 1901. TYPE: Mexico, Morelos, Pringle 8448 (GH, holotype).

Distribution: Mexico. See Matuda, Anales Inst. Biol. Univ. Nac. México 36: 85. 1965.

5. *Ipomoea hintonii* L. O. Williams, Econ. Bot. 24: 400. 1970. TYPE: Mexico, Hinton et al. 8474 (F, holotype).

Distribution: Mexico.

6. *Ipomoea purga* (Wender.) Hayne, Arzneigewächse 12: tab. 33, 34. 1833. Basionym: *Convolvulus purga* Wender., Pharm. Central-Blatt 1: 457. 1830. TYPE: Based on plants grown from seed collected in Mexico by Schiede, probably not preserved. Interpretation based on Hayne plates.

Synonyms: *Exogonium purga* (Wender.) Benth., Pl. Hartw. 46. 1840.

Ipomoea schiedeana Zucc., Flora 14: 801. 1831. TYPE: Based on plants collected in Mexico by Schiede and cultivated by Zuccarini. Probably based on the same Schiede collections as *I. purga*.

Distribution: Mexico, Guatemala, El Salvador, Honduras, Costa Rica, Panama.

7. *Ipomoea seducta* House, Ann. New York Acad. Sci. 18: 241. 1908. TYPE: Guatemala, Alta Verapaz, Tuerckheim 7926 (GH, US, isotypes).

Distribution: Mexico, Guatemala. See Standley & Williams, Fieldiana, Bot. 24 (9): 51. 1970.

8. *Ipomoea suffulta* (H.B.K.) G. Don, Gen. Syst. 4: 276. 1838.

Basionym: *Convolvulus suffultus* H.B.K., Nov. Gen. Sp. Pl. 3: 102, pl. 211.

1819. TYPE: Mexico, Volcán de Jorullo, *Humboldt & Bonpland* (P, not seen, microfiche seen).

9. *Ipomoea urbinei* House, *Muhlenbergia* 3: 41, *pl. 2. fig. b.* 1907. TYPE: Mexico, Volcán de Colima, *Bárcena 214* (presumably MEXU, not found).

Distribution: Known only from the type collection. See Matuda, *Anales Inst. Biol. Univ. Nac. México* 35: 67. 1964.

Group 6. The species in this group form a relatively homogeneous assemblage within *Eriospermum* which is normally recognized as a section or subgenus of *Ipomoea* (Verdcourt, 1963; Austin 1975a). Comose seeds separate these species from the others that have been placed in *Exogonium*. Some justification for the separation of this group from *Eriospermum* could be made. Most of the species listed here are adapted for bird pollination while others in *Eriospermum* are bee pollinated. If the two groups were placed in different taxa, several species-pairs (e.g., *I. eggersii*/*I. steudelii* and *I. viridiflora*/*I. carolina*) would be separated. While closely related, one species of these pairs conforms to the bee-pollination syndrome (*I. eggersii*), and the other to the bird-pollination syndrome (*I. steudelii*). If this alliance were separated from *Eriospermum*, the closely related species of the pairs would be placed in separate taxa.

Ipomoea mirandina/*I. microdactyla* alliance.

Exogonium Choisy, *Mem. Soc. Phys. Genève* 6: 443. 1834, in part, excl. type species.

Ipomoea sect. *Exogonium* (Choisy) Griseb., *Fl. Brit. W. I.* 472. 1862, excl. type species.

1. *Ipomoea argentifolia* A. Rich. in Sagra, *Hist. Cuba* 11: 131. 1850. TYPE: Isle of Pines, *Richard* (P, not seen).

Synonyms: *Exogonium argentifolium* (A. Rich.) House, *Bull. Torrey Bot. Club* 35: 102. 1908.

Ipomoea praecox Wright in Sauv., *Fl. Cubana* 107. 1873; *Anales Acad. Ci. Méd. Habana* 7: 46. 1870. TYPE: *Wright 3644* (US, isotype).

Distribution: Cuba, Isle of Pines, Mexico (Oaxaca, Puebla).

Although I have not seen the type of Richard's species, it is the only population on the Isle of Pines matching the protologue. The distribution of this species is worthy of note in that the plants are disjunct from western Cuba to the western slopes of the Sierra Madre Occidental in Mexico. The species is probably native to Cuba and not introduced since the allied species *Ipomoea lachnea* Sprengel (*Bertero*, MO, isotype) occurs in the Dominican Republic.

2. *Ipomoea carolina* L., *Sp. Pl.* 160. 1753. TYPE: Based on illustration in Catesby, *Nat. Hist. Carolina* 2: 9, *tab. 91* (lectotype).

Synonyms: *Exogonium pedatum* Choisy, *Mem. Soc. Phys. Genève* 8: 130. 1838. TYPE: Santo Domingo, *Poiteau* (G-DEL, not seen).

?*Ipomoea clausa* Rudolphi ex. Ledeb. & Adlerstam, *Pl. Doming.* 14. 1805; Ledeb., *Neues J. Bot.* 2: 292. 1807. TYPE: *Rudolphi coll.*? (not in LE).

Distribution: Haiti, Dominican Republic, Bahama Islands.

The synonymy listed here is based entirely on the descriptions since the types have not been seen. The protologue of *I. clausa* is general enough that one cannot be sure of the species. Some have thought that this name applies to *I. triloba*

(Matuda, 1965: 100). Perhaps *I. clausa* does apply to that species, but the description appears to me to better fit the population treated here as *I. carolina*. While I was in Geneva I looked for the type of *E. pedatum* but did not find it. Additional searching will perhaps solve that problem of synonymy.

3. *Ipomoea konzattii* Greenman, Publ. Field Columbian Mus., Bot. Ser. 2: 258. 1907. TYPE: Mexico, *Konzatti 1666* (F, holotype).

Synonym: *Exogonium konzattii* (Greenman) House, Bull. Torrey Bot. Club 35: 102. 1908.

Distribution: Mexico (Guerrero).

4. *Ipomoea concolora* (Matuda) D. Austin, comb. nov.

Basionym: *Exogonium concolorum* Matuda, Anales Inst. Biol. Univ. Nac. México 36: 116. 1965 (1966). TYPE: *Kruse 844* (MEXU, holotype).

5. *Ipomoea clarensis* Alain, Mem. Soc. Cub. Hist. Nat. "Felipe Poey" 22: 121. 1955. TYPE: Cuba, *Leon & Roca 7959* (NY, holotype, not found). Although the type was not found, there is a specimen [*Howard 6565* (US)] annotated by Alain.

Distribution: Endemic to Cuba. This species is very similar to *I. microdactyla*. The main difference is the flower color: red in *I. microdactyla* and white in *I. clarensis*.

6. *Ipomoea cubensis* (House) Urban, Symb. Antil. 9: 427. 1925.

Basionym: *Exogonium cubense* House, Bull. Torrey Bot. Club 35: 105. 1908. TYPE: *Britton & Shaffer 495* (NY, holotype).

7. *Ipomoea desrousseauxii* Steud., Nom. Bot., ed. 2. 816. 1841. TYPE: Based on *Convolvulus eriospermus* Desr.

Basionym: *Convolvulus eriospermus* Desr. in Lam., Encycl. Méth. Bot. 3: 567. 1789. TYPE: probably in P-LAM, not seen.

Synonyms: *Exogonium eriospermum* (Desr.) Choisy, Mem. Soc. Phys. Genève 8: 130. 1838. *Ipomoea eriosperma* (Desr.) Raf., Fl. Tell. 4: 74. 1838, non Beauv., 1807.

The specimen in the DeCandolle herbarium [Santo Domingo, *Bertero s.n.* (G-DC)] matches the description of Desrousseaux and the synonymy is based on that specimen.

Distribution: Santo Domingo.

8. *Ipomoea eggersii* (House) D. Austin, comb. nov.

Basionym: *Exogonium eggersii* House, Bull. Torrey Bot. Club 35: 104. 1908. TYPE: St. Thomas, Feb. 1887, *Eggers* (NY, holotype, not found; G, L, isotypes).

Distribution: St. Thomas, Tortola.

This species has been confused with *I. steudelii*. Differences between them are few; the major distinction is that *I. eggersii* has white bee-pollinated flowers and *I. steudelii* has red bird-pollinated flowers.

9. *Ipomoea fuchsoides* Griseb., Cat. Pl. Cub. 205. 1886. TYPE: Cuba, *Wright 3095* (MO, isotype).

Synonyms: *Exogonium fuchsioides* (Griseb.) House, Bull. Torrey Bot. Club 35: 101. 1908.

Distribution: Endemic to Cuba.

10. *Ipomoea incerta* (Britton) Urban, Symb. Antil. 9: 247. 1924.

Basionym: *Exogonium incertum* Britton, Mem. Torrey Bot. Club 16: 94. 1920. TYPE: Cuba, *Shafer 1235* (NY, holotype).

Distribution: Endemic to Cuba.

11. *Ipomoea jalapoides* Griseb., Cat. Pl. Cub. 202. 1886. TYPE: Cuba, *Wright 3097* (MO, isotype).

Synonym: *Exogonium jalapoides* (Griseb.) House, Bull. Torrey Bot. Club 35: 101. 1908.

Distribution: Endemic to Cuba.

12. *Ipomoea longistaminea* O'Donell, Lilloa 23: 488. 1950. TYPE: Brasil, Bahia, *Rose & Russell 19784* (US, holotype).

Distribution: Endemic to Brasil and apparently to the state of Bahia.

13. *Ipomoea leuconeura* Urban, Symb. Antil. 3: 350. 1902. SYNTYPES: Haiti, *Ehrenberg 134* (US, fragment), *Picarda 16* (US, fragment), *Buch 5* (not seen).

Synonym: *Exogonium leuconeurum* (Urban) House, Bull. Torrey Bot. Club 35: 106. 1908.

Distribution: Endemic to Haiti.

14. *Ipomoea microdactyla* Griseb., Cat. Pl. Cub. 204. 1886. TYPE: Cuba, *Wright 3094* (MO, isotype).

Synonyms: *Exogonium microdactylum* (Griseb.) House, Bull. Torrey Bot. Club 35: 102. 1908.

Exogonium microdactylum var. *integrifolium* House, Bull. Torrey Bot. Club 35: 103. 1908. TYPE: Cuba, *Wright 3102* (MO, isotype).

Ipomoea repanda sensu Griseb., Cat. Pl. Cub. 204. 1886, non Jacq., 1760.

Distribution: Florida, Bahamas, Cuba. These vines are found only in the rocky pinelands of Dade and Monroe counties in Florida. In the Bahamas (Inagua) the Bahama Woodstar hummingbird visits and pollinates the flowers.

15. *Ipomoea mirandina* (Pittier) O'Donell, Lilloa 26: 370. 1953.

Basionym: *Exogonium mirandinum* Pittier, J. Wash. Acad. Sci. 21: 143. 1931. TYPE: Venezuela, *Pittier 12217* (VEN, holotype; US, isotype).

Distribution: Known from Venezuela and Panama; undoubtedly in Colombia also but no specimens seen.

16. *Ipomoea repanda* Jacq., Enum. Pl. Carib. 13. 1760; Sel. Stirp. Amer. 28, pl. 20. 1763, non Griseb., 1886. LECTOTYPE: illustration by Jacquin, pl. 20. 1763.

Synonyms: *Convolvulus repandus* (Jacq.) Desr. in Lam., Encycl. Méth. Bot. 3: 555. 1789. *Exogonium repandum* (Jacq.) Choisy, Mem. Soc. Phys. Genève 8: 128. 1838.

Distribution: Puerto Rico, Tortola, Cuba, Barbuda, Antigua, Martinique, Dominica, Guadeloupe, St. Vincent, Montserrat, St. Lucia, St. Jan.

17. *Ipomoea retropilosa* (Pittier) D. Austin, comb. nov.

Basionym: *Exogonium retropilosum* Pittier, J. Wash. Acad. Sci. 21: 143. 1931. TYPE: Venezuela, Mérida, Pittier 12698 (VEN, holotype; MO, US, isotypes).

Distribution: Endemic to the coastal mountains of Venezuela.

18. *Ipomoea shinersii* D. Austin, nom. nov.

Basionym: *Exogonium luteum* House, Bull. Torrey Bot. Club 35: 103. 1908. TYPE: Mexico, Conzatti & Gonzalez 668 (GH, holotype; NY, isotype).

Because of *Ipomoea lutea* Hemsley (Diagn. Pl. Nov. 34, tab. 60. 1878) a new name is required for House's species. The new name commemorates the late Lloyd Shiners, a student of Convolvulaceae.

Distribution: Mexico. (Guerrero).

19. *Ipomoea shinersii* var. *woronovii* (Standley) D. Austin, comb. et stat. nov.

Basionym: *Exogonium woronovii* Standley, Field Mus. Nat. Hist., Bot. Ser. 11: 171. 1932. TYPE: Mexico, Woronow 2906 (F, holotype).

Distribution: Mexico (Michoacán).

20. *Ipomoea signata* House, Muhlenbergia 3: 46. 1907. TYPE: Guatemala, Nelson 3595 (US, holotype).

Distribution: Mexico, Guatemala, Venezuela. See Matuda, Anales Inst. Biol. Univ. Nac. México 35: 72. 1964; Standley & Williams, Fieldiana, Bot. 24 (9): 53. 1970. The distribution of this species is unusual in that it appears to be absent from a large part of Central America and reappears in the coastal mountains of Venezuela.

21. *Ipomoea steudelii* Millsp., Publ. Field Columbian Mus. Nat. Hist., Bot. Ser. 2: 86. 1901. TYPE: Based on *Ipomoea arenaria* (Choisy) Steud.

Synonyms: *Exogonium arenarium* Choisy, Mem. Soc. Phys. Genève 8: 129, pl. 1. 1838. TYPE: Puerto Rico, Bertero (G-DC, lectotype). *Ipomoea arenaria* (Choisy) Steud., Nom. Bot., ed. 2. 815. 1841, non Roem. & Schult., 1819.

Ipomoea eggersiana Peter in Engler & Prantl, Nat. Pflanzenfam. IV (3a): 30. 1891, nom. nud.

Distribution: Puerto Rico, St. Croix, Virgin Gorda, St. Thomas, St. John.

Choisy based *Exogonium arenarium* on four collections. These collections came from Puerto Rico, St. Thomas, Santo Domingo, and the Bahamas. According to the interpretation that has been used for the past 60 to 70 years, the species does not occur on either the island of Hispaniola or in the Bahamas. Therefore, neither of the collections cited by Choisy from these islands should be chosen as the type. The specimen in Geneva matches the concept of historic use and has been chosen to be the lectotype.

22. *Ipomoea avicola* D. Austin, nom. nov.

Basionym: *Exogonium verruculosum* Pittier, J. Wash. Acad. Sci. 21: 142. 1931. TYPE: Venezuela, Aragua, Pittier 12118 (VEN, holotype; G, US, NY, isotypes).

Synonym: *Ipomoea verruculosa* (Pittier) O'Donnell, Lilloa 26: 379. 1953, non *I. verruculosa* Mart. ex Choisy in DC., Prodr. 9: 378. 1845, nom. pro syn.

Distribution: Endemic to the coastal mountains of Venezuela.

This and the Brazilian *I. longistaminea* O'Donell are similar. These two populations apparently represent local endemic bird-pollinated flowers derived independently.

23. *Ipomoea viridiflora* Urban, Symb. Antil. 3: 348. 1902. TYPE: *Ehrenberg 345* (US, isotype).

Synonym: *Exogonium viridiflorum* (Urban) House, Bull. Torrey Bot. Club 35: 106. 1908.

Distribution: Cuba, Hispaniola.

Group 7. These two species belong to different alliances within the *Eriosperrum* group of *Ipomoea*. Flowers on the plants are apparently bee pollinated and the inclusion of these species in *Exogonium* appears anomalous.

1. *Ipomoea argentea* Meisn. in Mart., Fl. Bras. 7: 247. 1869. SYNTYPES: Brasil, *Gardner 3356* (not seen). Venezuela, *Spruce 3605* (K).

Synonyms: *Ipomoea comosa* House, Ann. New York Acad. Sci. 18: 201. 1908. TYPE: Based on *I. villosa* (Choisy) Meisn. *Batatas villosa* Choisy in DC., Prodr. 9: 337. 1845. TYPE: Brasil, *Martius 609* (M, syntype). *Ipomoea villosa* (Choisy) Meisn. in Mart., Fl. Bras. 7: 244. 1869, non Ruiz & Pavon, 1799. *Exogonium villosum* (Choisy) Peter in Engler & Prantl, Nat. Pflanzenfam. IV (3a): 28. 1891.

Distribution: Known from savannas in Venezuela, south to Brasil. The plants show considerable variation throughout the range, prompting the division of the population. O'Donell (1960) was one of the first to point out that they were the same.

2. *Ipomoea steerei* (Standley) L. O. Williams, Fieldiana, Bot. 32: 195. 1970. Basionym: *Exogonium steerei* Standley, Carnegie Inst. Wash. 461: 83. 1935. TYPE: *Steere 1545* (F, lectotype). *Steere 1599* (F, syntype).

Distribution: Reported from Mexico and Guatemala.

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